

21. (Canceled)

23. (Amended) An internal combustion engine, comprising:

an elongate rocker arm, an aperture defined by said rocker arm;

a center post slidingly disposed within said aperture, said center post engaging a valve stem of a valve of said internal combustion engine; and

a locking pin assembly selectively coupling together and decoupling said center post and said rocker arm.

## REMARKS

Claims 1-25 are pending in this application. Claims 1-3, 6-9, 12, 15-16, 18-21, and 23-25 are rejected, claims 4-5, 13 and 14 are objected to, and claims 10-11, 17 and 22 are withdrawn from further consideration. Claims 1 and 19-21 are canceled, and claims 2, 4, 12, 13 and 23 are amended, hereby.

Responsive to the rejection of claim 1 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,544,628 (Voigt), Applicants respectfully point out that claim 1 has been canceled hereby. Accordingly, Applicants request withdrawal of this rejection.

Responsive to the rejection of claims 12 and 23 under 35 USC §102(e) as being anticipated by U.S. Patent No. 6,244,257 (Hu), Applicants have amended claims 12 and 23, and submit that claims 12 and 23 are now in condition for allowance.

Hu discloses rocker 130a (Fig. 8) having a hydraulic subcircuit 64a that is pressurized to push slave piston 70a into contact with the upper end of engine valve 30a. The pressure within subcircuit 64a is not great enough to open valve 30a against the valve-closing force of springs 32a. If valve 100a is closed when cam lobe 42aa or 42ab passes roller 132a, slave piston 70a will move into rocker 130a, thereby expelling some hydraulic fluid from subcircuit 64a and allowing valve 30a to remain closed despite the passage of a cam lobe 42. (*column 8, lines 3-14*).

In contrast, each of claims 12 and 23 recite in part “a locking pin assembly selectively coupling together and decoupling said center post and said rocker arm”. (*Emphasis Added*). Applicants submit that such a structure is not disclosed or suggested by the cited reference, alone or in combination, and includes distinct advantages thereover.

The rocker arm of Hu includes an element (a slave piston) that is hydraulically actuated. The hydraulic pressure is used to switch the element between an activated and a deactivated state or position wherein the corresponding engine valve is respectively activated and deactivated by a rotating cam. The slave piston of Hu is not a locking pin assembly. Hu does not disclose a locking pin assembly. Thus, Hu fails to disclose or suggest a locking pin assembly selectively coupling together and decoupling a center post and the rocker arm, as recited in part by each of claim 12 and claim 23.

The present invention includes distinct advantages over the cited reference. The rocker arm of Hu is hydraulically actuated. Thus, Hu requires hydraulic passages be

formed in the cylinder head, and that corresponding hydraulic passages be formed in the rocker arm. These passages must be precisely aligned and connected in a fluid tight manner. Hu further requires a hydraulic control circuit within the rocker arm, and a separate hydraulic control circuit to control the flow of hydraulic fluid to and from the rocker arm. Conversely, the present invention is switchable between a default and a deactivated state or position by an actuating device (not shown), such as, for example, a hydraulic piston or actuating solenoid, that is disposed in association with the actuator pin. *(page 9, lines 18-22 of the present specification)*. Thus, the deactivation rocker arm of the present invention requires no internal hydraulic passageway or control circuit, and the need for external hydraulic control circuits is minimized.

For the foregoing reasons, Applicants submit that the cited reference fails to disclose or suggest the subject matter of amended claims 12 and 23. Therefore, claim 12, claims 13-16 and 18 depending therefrom, claim 23, and claims 24-25 depending therefrom, are now in condition for allowance. Accordingly, Applicants respectfully request withdrawal of the rejection and allowance of amended claims 12 and 23, and the claims depending therefrom.

Responsive to the rejection of claims 2-3, 6-9, 15-16, 18-21 and 24-25 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,544,628 (Voigt) in view of U.S. Patent No. 6,244,257 (Hu), Applicants have amended claim 2, canceled claims 19-21, and amended claim 23. Applicants submit that amended claim 2, and claims 24-25 that depend from amended claim 23, are now in condition for allowance.

Voigt discloses rocker arm 4 (Fig. 1) having a hollow chamber 17 that accommodates locking element (i.e., ball) 20 that is displaced between a first and second position 18 and 19, respectively. (*column 3, lines 9-20*). Chamber 17 is connected to pressure medium inlet 24 via bore 23 in cylinder head 1 and pressure line 25 formed in arm 4. (*column 3, lines 24-30*). Locking element 20 is switched between the two positions by pneumatic pressure. (*column 3, lines 33-36*).

Hu is discussed above.

In contrast, claim 2 recites in part “a deactivation rocker arm assembly including a locking pin assembly selectively coupling together and decoupling said center post and said rocker arm”. (*Emphasis Added*). Applicants submit that such a structure is not disclosed or suggested by the cited reference, alone or in combination, and includes distinct advantages thereover.

The rocker arm of Hu includes an element (a slave piston) that is actuated by hydraulic fluid/pressure supplied and controlled by a hydraulic control circuit. The rocker arm of Voigt includes an element (a ball) that is actuated by pneumatic pressure supplied and controlled by a pneumatic control circuit. In each of those rocker arms, the hydraulic or pneumatic pressure is used to switch the corresponding element between an activated and a deactivated position or state wherein the associated engine valve is respectively activated and deactivated by a rotating cam. The slave piston and hydraulic control circuit of Hu is not a locking pin assembly. The ball member of Voigt is not a locking pin assembly. Neither Hu or Voigt disclose a locking pin assembly. Thus, Hu and Voigt,

alone or in combination, fail to disclose or suggest a deactivation rocker arm assembly including a locking pin assembly that selectively couples together and decouples a center post and the rocker arm, as recited in part by claim 2.

The present invention includes distinct advantages over the cited reference. The rocker arm of Hu is hydraulically actuated. Thus, Hu requires hydraulic passages be formed in the cylinder head, and that corresponding hydraulic passages be formed in the rocker arm. These passages must be precisely aligned and connected in a fluid tight manner. Hu also requires a hydraulic control circuit within the rocker arm, and a separate hydraulic control circuit to control the flow of hydraulic fluid to and from the rocker arm. Similarly, the rocker arm of Voigt is pneumatically actuated. Thus, the rocker arm of Voigt requires internal and external pneumatic passages and control circuits. Conversely, the present invention is switchable between a default and a deactivated state by an actuating device (not shown), such as, for example, a hydraulic piston or actuating solenoid, that is disposed in association with the actuator pin. *(page 9, lines 18-22 of the present specification)*. Thus, the deactivation rocker arm of the present invention requires no internal hydraulic passageway or control circuit, and the need for external hydraulic control circuits is minimized.

For the foregoing reasons, Applicants submit that no combination of the cited references teaches, discloses or suggests the subject matter of amended claim 2. Claim 2, and claims 3-9 depending therefrom, are therefore in condition for allowance.

Accordingly, Applicants respectfully request withdrawal of the rejection and allowance of

amended claim 2, and claims 3-9 depending therefrom.

Claims 15-16 and 18 were also rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,544,628 (Voigt) in view of U.S. Patent No. 6,244,257 (Hu). Applicants respectfully point out that claims 15-16 and 18 depend from claim 12. Claim 12, as amended, recites in part “a locking pin assembly selectively coupling together and decoupling said center post and said rocker arm”. (*Emphasis Added*). Thus, amended claim 12 recites substantially the same subject matter as recited in part by amended claim 2, which was also rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,544,628 (Voigt) in view of U.S. Patent No. 6,244,257 (Hu). For the same reasons given above in regard to amended claim 2, Applicants submit that amended claim 12 and claims 15-16 and 18 depending therefrom are also now in condition for allowance. Accordingly, Applicants respectfully request withdrawal of the rejection and allowance of claims 15-16 and 18.

Claims 19-21 were also rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,544,628 (Voigt) in view of U.S. Patent No. 6,244,257 (Hu). Applicants respectfully point out that claims 19-21 have been canceled hereby. Accordingly, Applicants respectfully request withdrawal of the rejection.

Claims 24-25 were also rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,544,628 (Voigt) in view of U.S. Patent No. 6,244,257 (Hu). Applicants respectfully point out that claims 24-25 depend from claim 23. Claim 23, as amended, recites in part “a locking pin assembly selectively coupling together and

decoupling said center post and said rocker arm". (*Emphasis Added*). Thus, amended claim 23 recites substantially the same subject matter as recited in part by amended claim 2, which was also rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,544,628 (Voigt) in view of U.S. Patent No. 6,244,257 (Hu). For the same reasons given above in regard to amended claim 2, Applicants submit that amended claim 23 and claims 24-25 depending therefrom are also now in condition for allowance. Accordingly, Applicants respectfully request withdrawal of the rejection and allowance of claims 24-25.

The Examiner indicated that claims 4-5 and 13-14 would be allowable if rewritten in independent form to include all of the limitations of their base claims and any intervening claims, for which courtesy the Examiner is thanked. Applicants respectfully submit that amended claims 2 and 12, from which claims 4-5 and 13-14 respectively depend, are now in condition for allowance for the reasons given above. Accordingly, Applicants have deferred rewriting claims 4-5 and 13-14 in independent form to include all of the limitations of their base claims and any intervening claims, pending the evaluation by the Examiner of the present Amendment and allowance of the pending claims. However, the Applicants did amend claims 4 and 13 to be in allowable form in light of and to be consistent with the amendments made to claims 2 and 12, respectively.

For all the foregoing reasons, Applicants submit that the pending claims are definite and do particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Moreover, Applicants submit that no combination of

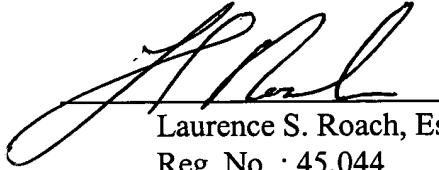
the cited references teaches, discloses or suggests the subject matter of the pending claims. The pending claims are therefore in condition for allowance, and Applicants respectfully request withdrawal of all rejections and allowance of the claims.

5 In the event Applicants have overlooked the need for an extension of time, an additional extension of time, payment of fee, or additional payment of fee, Applicants hereby conditionally petition therefore and authorize that any changes be made to Deposit Account No.50-0831, DELPHI TECHNOLOGIES, INC.

The Examiner is invited to telephone the undersigned in regard to this Amendment and the above identified application.

Respectfully submitted,

19-SEP-02  
Date

  
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PATENT  
89190.090700 (DP301278)

## IN THE UNITED STATES PATENT & TRADEMARK OFFICE

Applicant:	Lee, et al.	)	
		)	
Serial No.:	09/755,290	)	
		)	Examiner: Corrigan, Jaime
Filed:	January 5, 2001	)	
		)	Art Unit: 3748
For:	VALVE DEACTIVATION	)	
	SYSTEM WITH FREE MOTION	)	
	SPRING	)	
		)	

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### MARKED-UP COPY OF AMENDMENTS TO THE CLAIMS

Hon. Assistant Commissioner for Patents  
**Box: NON-FEE AMENDMENT**  
Washington, D.C. 20231

Dear Sir:

In compliance with 37 CFR §1.121, Applicant hereby submits the following marked-up copy of the revisions made to the Claims by the Amendment submitted in response to the Office Action mailed June 20, 2002.

**RECEIVED**  
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TECHNOLOGY CENTER R3700

## IN THE CLAIMS

Claims 1 and 19-21 are canceled hereby.

Claims 2, 4, 12, 13 and 23 have been amended as follows:

1. (*Canceled*)

2. (*Amended*) [The valve deactivation system of claim 1, wherein said deactivation rocker arm assembly comprises] A valve deactivation system, comprising:  
a deactivation rocker arm assembly including an elongate rocker arm, an aperture defined by said rocker arm[;], a center post slidingly disposed within said aperture, said  
5 center post configured for engaging a valve stem of a valve of an internal combustion engine[;], and [coupling means] a locking pin assembly selectively coupling together and decoupling said center post and said rocker arm; and  
a free motion spring assembly.

4. (*Amended*) The valve deactivation system of claim 2, wherein said end of said  
rocker arm defines a first pin bore and a second pin bore, said first pin bore and said  
second pin bore being substantially concentric relative to each other, said center post  
defining a middle pin bore, [said coupling means comprises a locking pin assembly,] said  
5 locking pin assembly including an actuating pin, a second pin member and a middle pin  
member, said actuating pin member slidingly disposed at least partially within said first

pin bore, said second pin member slidingly disposed at least partially within said second pin bore, and said middle pin member slidingly disposed at least partially within said middle pin bore.

12. (*Amended*) A deactivation rocker arm assembly, comprising:

an elongate rocker arm having an end, an aperture defined by said end;

a center post slidingly disposed within said aperture, said center post configured for engaging a valve stem of a valve of an internal combustion engine; and

5        [coupling means] a locking pin assembly selectively coupling together and decoupling said center post and said rocker arm.

13. (*Amended*) The deactivation rocker arm assembly of claim 12, wherein said end of said rocker arm defines a first pin bore and a second pin bore, said first pin bore and said second pin bore being substantially concentric relative to each other, said center post defining a middle pin bore, [said coupling means comprises a locking pin assembly,]  
5        said locking pin assembly including an actuating pin, a second pin member and a middle pin member, said actuating pin member slidingly disposed at least partially within said first pin bore, said second pin member slidingly disposed at least partially within said second pin bore, and said middle pin member slidingly disposed at least partially within said middle pin bore.

19. (*Canceled*)

20. (*Canceled*)

21. (*Canceled*)

23. (*Amended*) An internal combustion engine, comprising:

an elongate rocker arm, an aperture defined by said rocker arm;

a center post slidingly disposed within said aperture, said center post engaging a

valve stem of a valve of said internal combustion engine; and

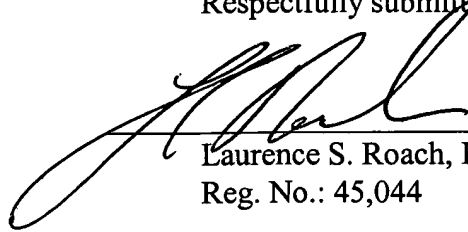
5        [coupling means] a locking pin assembly selectively coupling together and  
decoupling said center post and said rocker arm.

The Examiner is invited to telephone the undersigned in regard to this  
Amendment and the above identified application.

Respectfully submitted,

19-SEP-02

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